



UNITED STATES PATENT AND TRADEMARK OFFICE

[Signature]
UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/913,433	08/14/2001	John Malcolm Gascoyne	JMYT-246US	9812
23122	7590	04/22/2004	EXAMINER	
RATNERPRESTIA P O BOX 980 VALLEY FORGE, PA 19482-0980			TORRES VELAZQUEZ, NORCA LIZ	
			ART UNIT	PAPER NUMBER
			1771	
DATE MAILED: 04/22/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/913,433

Applicant(s)

GASCOYNE ET AL.

Examiner

Norca L. Torres-Velazquez

Art Unit

1771

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 5-25 is/are pending in the application.
- 4a) Of the above claim(s) 13-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 5-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. The objection of claims 1-2 and 5-12 have been withdrawn in view of Applicant's amendment.
2. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

- a. Applicants have amended claim 1 to include the limitations of canceled claim 4. Applicants argue that Denton et al. does not disclose a nonwoven fiber web wherein the proportion of short fibers is no more than 70 wt% of the total weight of fibers and further that it does not disclose or suggest the claimed feature of a small fiber (3 mm or less) and that WILLIAMS et al. does not teach "short" fibers as defined in claim 1.

A new rejection over DENTON et al. in view of TANAKA et al. is written below in which TANAKA et al. provides a nonwoven web for a battery separator with short fiber from 1mm to less than 25 mm.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2 and 5-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over DENTON et al. (EP 0791974A1) in view of TANAKA et al. (EP 0872901 A2) and further evidenced by WILLIAMS (US 5,935,884).

Art Unit: 1771

DENTON et al. disclose a gas diffusion electrode that comprises a non-woven network of fibers. The reference teaches that the non-woven network of fibers has a density of less than 0.6 g/cm³. It further teaches the use of carbon, glass, polymer, metal or ceramic fibers with lengths from 0.05 mm to 300 mm. (Abstract) The reference further teaches that the fibers within the matrix are normally randomly orientated in the x and y direction (in-plane) producing a two dimensional isotropic structure. Additionally random orientation in the z direction (through-plane) occurs with the inclusion of very short fibers, typically lengths of ≤ 2 mm. (Column 3, lines 42-47)

In their examples, DENTON et al. provide nonwoven webs constituted by 17% by weight of long fibers (37 mm teflonated fibers and 12 mm teflonated fibers) and 83% by weight of short fibers (1 mm teflonated fibers and glass microfibers). Therefore, DENTON ET AL.'s teachings read on the fiber weights claimed on claims 1 and 3.

With regards to the limitation requiring that the content of shorter fibers is no more than 70% by weight of the total fibers, it is noted that Applicant's ranges for the limitation of fiber content are broad and encompass typical values that are found in the prior art. Further each of the elements are recognized as result effective variables in this field of endeavor and it has been held that discovering optimum values would have been or result effective variables involves only routine experimentation. To show that these are typical ranges found in the prior art, the Examiner is citing the WILLIAMS et al. reference. WILLIAMS et al. disclose a nonwoven composite we suitable for use as a battery separator that is formed by a wet process on a papermaking machine. (Abstract) The reference teaches the use of a composite material comprising two types of fibers, staple and binder fibers. It teaches the use of nylon 6 binder fiber

Art Unit: 1771

to make up 10 to 40% of the fiber furnish, and two different denier staple fibers making up the balance. (Refer to Column 4, lines 14-51).

TANAKA et al. teaches an alkaline battery separator comprising a nonwoven fabric containing one or more mixture layers of entangled short fibers and entangled long fibers, wherein a fiber length of the short fibers is from 1 mm to less than 25 mm, a fiber length of the long fibers is 25 mm or more. (Abstract)

Since both DENTON et al. and TANAKA et al. are directed to nonwoven web for use in electrochemical devices, the purpose disclosed by TANAKA et al. would have been recognized in the pertinent art of DENTON et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the nonwoven network of DENTON et al. and provide it a content of shorter fibers of less than 70% of the total content of fibers with the motivation of producing a nonwoven material suitable for use in electrochemical devices such as separator material in batteries such that the separator is inert to the electrolyte and to the reactions occurring at the surfaces of the electrodes as disclosed by WILLIAMS et al. (Column 1, lines 21-23) and to use fibers of less than 3mm with the motivation of providing a battery separator that exhibits an excellent electrolyte-holding capacity, tensile strength, tear strength and bending resistance, and that can be used to stably prepare a battery as disclosed by TANAKA et al. (Abstract)

It is further noted that even though that TANAKA et al. defines the long fibers as being of 25 mm or more, the Examiner understands that the reference provides fibers with lengths as low as 1 mm to 25 mm or more and that covers the range of values being claimed in the present

Art Unit: 1771

invention, therefore the teachings of TANAKA et al. are not limited by the language of short and long fibers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Norca L. Torres-Velazquez whose telephone number is 571-272-1484. The examiner can normally be reached on Monday-Thursday 8:00-4:00 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Norca L. Torres-Velazquez
Examiner
Art Unit 1771

April 19, 2004